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**REPORT ON THE BIRDS AND MAMMALS COLLECTED BY THE
MCILHENNY EXPEDITION TO PT. BARROW, ALASKA.**

BY WITMER STONE.

Through the courtesy of Mr. E. A. McIlhenny, I have been entrusted with the preparation of a report on the splendid collection of birds and mammals obtained by him during his sojourn at Point Barrow, August, 1897, to August, 1898.

It was originally intended to defer the publication of this paper until the issue of a general report of the expedition which Mr. McIlhenny has in view, but for many reasons we deemed it best to present it at once.

It will be understood that the following pages consist entirely of a study of the skins, and that Mr. McIlhenny's field notes are reserved for the subsequent report.

The material obtained is the finest yet brought from the Arctic regions, and the series are so full that the molts and variations of plumage in many of the birds, that have not previously been understood, are beautifully illustrated.

For convenience of reference, it should be stated that the expedition was in the North Pacific, July 5-22, 1897; at King's Island, July 23; Port Clarence, July 24-28; Point Hope, July 31-August 1; Cape Lisburne, August 1; Wainwright Island, August 3, and Pt. Barrow, August 10, 1897, to August 17, 1898.

BIRDS.

The collection of birds comprises 1,408 specimens, representing sixty-nine species. Of these nine were obtained on the northward trip at points south of Pt. Barrow, leaving sixty as the number actually secured at that locality.

Six species observed by Lieut. Murdoch¹ were not obtained, though they may have been seen, *i. e.*, *Olor columbianus*, *Numenius borealis*, *Tringa subarquata*, *Junco hyemalis*, *Clivicola riparia* and *Saxicola ananthe*.

On the other hand, thirteen species were obtained which are not

¹ Cf. *Report of the Internat. Polar Exp. to Pt. Barrow, Alaska*, Washington, 1885.

recorded in Murdoch's list, *i. e.*, *Asio accipitrinus McIlhennyi*, *Contopus richardsonii*, *Calcarius pictus*, *Ammodramus sandwichensis alaudinus*, *Dendroica coronata*, *Budytes flavus leucostriatus*, *Hylocichla aliciae*, *Rissa tridactyla pollicaris*, *Larus glaucescens*, *Phalacrocorax pelagicus robustus*, *Oidemia deglandi*, *Calidris arenaria* and *Limosa fedoa*.² One species, *Eudromias morinellus*, obtained at King's Island, is new to the North American fauna, and another, *Asio accipitrinus McIlhennyi*, seems to represent a new geographic race.

Gavia adamsii (Gray)—Yellow-billed Loon.

Twelve specimens of this species were obtained, ten of them were adults in nuptial plumage taken on the following dates: Males—June 30, 25, June —, 1898; September 25 (2), August 28 (2), August 30, 1897; Females—June 27 and July 21, 1898. None of these show any trace of molt, except No. 671 (September 25), in which the neck feathers are being lost.

A young bird, taken June 14, is in full juvenal plumage: white on the breast, belly and throat; lower neck dusky like the sides of the neck, above general color gray, feathers mostly blackish at the base with broad gray edgings, crown and back of neck gray sides with feathers tipped with brownish.

One adult specimen, September 29, has just completed the molt, and the new wings are only half grown: above glossy black with a tinge of green appearing "scaly" in certain lights, top of head and back of neck black, feathers on sides of neck slightly tipped with black.

The flight feathers in the Loons are evidently lost all at once, as in the Ducks.

Gavia pacifica (Lawr.)—Pacific Loon.

A series of forty-nine specimens. Twenty-five males—July 5, '98; July 11, '98; August 25, '97 (2); August 20, '97 (2); August 24, August 26, August 30 (8), August 31 (9), and twenty females—August 24, '97, (2); August 30 (5), August

² Only twelve birds were obtained in August, 1898, and only six mammals, *i. e.*, *Gavia adamsii*, *Dafila acuta*, *Tringa bairdi* (4), *T. subruficollis*, *T. canuta*, *Phalaropus lobatus* (3), *Budytes flavus leucostriatus* and *Spermophilus empetra* (6), so that with the above exceptions all August to December specimens were obtained in 1897 and all January to July specimens marked Pt. Barrow in 1898.

31 (11), September 16 and 20—these are all in more or less worn nuptial dress, some have a few new pinfeathers just showing their points, but molt is indicated more by the extreme looseness of the old body feathers than by the appearance of new ones. There is no trace of molt in the flight feathers. Four specimens are in full winter dress, though the primaries still show the traces of the sheaths at their bases.

There are no young birds.

Gavia lumme (Gunn)—Red-throated Loon.

A series of seventeen specimens.

Four are downy young taken August 3, at Wainwright Island. Twelve are adults: Males—August 15, 20 (2), 26, 30 (2), September 17, 1897, and females—August 3 (2), 26, 27, 30, 1897.

These show no molt whatever, though several are very much worn, especially No. 360 (August 26) and No. 776 (August 30). One female, September 17, has completed the molt, though the primaries still retain portions of the sheaths.

Uria troile californica (Bryant)—California Murre.

One specimen from King's Island, July 23, 1897, is referable to this race. Measurements: wing 8 ins., length of culmen 1.62 ins., depth of culmen .55 in.

Uria lomvia (Linn.)—Brünnich's Murre.

Seventeen specimens represent this species. A pair taken May 23 are in full nuptial plumage. Twelve others (July 31, one female; August 1, six males and five females) are similar, but much worn, with the tips of the primaries often distinctly bleached.

A female, August 30, is molting. The entire series of remiges have been lost simultaneously, as in the Ducks, and the new feathers are just showing beyond the edge of the coverts. The back is about half molted, old feathers showing bleached brownish tips, the new ones jet black.

Two young in the down, July 28, 1898, are uniform dark plumbeous above, lighter below.

As the question of the relation of the Pt. Barrow birds to *U. l. arra* naturally presents itself I append measurements of the wing in a series of fourteen specimens. Seven males, 8.15–9 ins., average 8.77; seven females 8.45–8.75, average 8.60.

Cepphus mandtii (Licht.)—Mandt's Guillemot.

A most interesting series of twenty-seven specimens was obtained. Beginning with the late summer specimens, these may be described as follows:

August 30, old breeding bird, very much worn and with wing feathers much bleached. A few white feathers on the breast and neck, but no further molt.

Ten specimens, August 15 (2), August 21, August 28, August 30 (4), August 31, September 15, have lost all or nearly all the remiges, they evidently fall almost simultaneously, but the primary coverts persist. This series shows varying amounts of new white feathers, both above and below. One taken August 15 shows none at all, and in none is there more white than black.

Four specimens, September 17 (2), September 7, September 8, show the new remiges about half-grown, with the body feathers about half white and half black.

Two specimens, March 10 and 11, are in adult winter plumage, pure white below, interscapulum black with white edges to the feathers.

Two others, March 10 and 28, illustrate the spring molt of the body plumage; about one-half of the black feathers have appeared.

Eight young (birds of the year), September 23, January 11 (2), February 6, March 10, March 24, March 28, March 30, exhibit much variation in the amount of black on the head and black spots on wing coverts. All have narrow black tips to white feathers of the abdomen. None of these birds show any trace of the spring molt which was well under way in the adults at the time that most of these were taken.

Lunda cirrhata Pall.—Tufted Puffin.

Two females, August 1. Cape Lisburne.

Fratercula corniculata (Naum.)—Horned Puffin.

Four males and four females. Cape Lisburne.

Cyclorhynchus psittaculus (Pall.)—Paroquet Auklet.

Three females, July 23. King's Island.

Simorhynchus pusillus (Pall.)—Least Auklet.

One specimen, secured August 30.

Stercorarius parasiticus (Linn.)—Parasitic Jaeger.

Twenty-two specimens represent the dark phase of plumage: 1897—July 24, August 20, August 24 (2), August 30 (3), August — (2), September 9; 1898—June 1, June 17 (2), June 27 (2), July 7, July 8 (4), July 9 (2).

These are very uniform in plumage and exhibit no molt. Two are slightly mottled below with light crossbars, and two others have barred under wing coverts, but from the worn condition of the plumage they appear not to be birds of the year.

The light phase of plumage is illustrated by nine specimens: 1897—July 24 (2), August 20, August 24, August 30 (3), September 9 (2). These show no variation.

Stercorarius longicaudus Vieill.—Long-tailed Jaeger.

Fourteen specimens secured 1898: June — (2), June 11 (2), June 17 (4), July 2, July 8, July 13 (4).

These are all quite uniform, except one male taken July 13 (No. 1,302). This is slightly mottled across the breast, the under wing coverts are barred with white and black, and some of the tail coverts similarly barred, the back is sprinkled with dull brownish feathers. Some of the feathers forming the white collar are barred with dusky and some of those on the head have whitish edges. All the feathers are worn and the bird has evidently passed the winter in this dress.

Stercorarius pomarinus (Temm.)—Pomarine Jaeger.

The light phase of plumage is represented by a series of forty-six specimens: 1897—July 24, August — (5), August 14 (8), August 15 (2), August 20 (10), August 24 (2), August 30, August 26, August 27; 1898—May 23 (3), May 30, May 31 (6), June 2, June 4, June —, July 3, July 8.

Twenty-nine are in the dark phase: 1897—August 20 (2), August 30 (4), September 20; 1898—June — (3), June 6, June 8 (2), June 11, June 12, June 14 (3), June 23, June 28 (2), July 3, July 8 (7).

There are also twelve young in the down, making total of eighty-seven specimens.

While the August specimens of both phases are molting some of the body plumage, there is no trace of molt in the flight feathers. The variations of plumage exhibited are as follows: Of the white

series twelve have the under tail coverts barred and the lower belly and thighs more or less white, the lightest of all (No. 208, August 15, 1897) having only a trace of dark shading on the belly and only the tips of the under coverts black; there is scarcely any black on the breast and the bars on the sides are restricted to the sides of the chest, there is a broad white collar on the hind neck and considerable white on the upper tail coverts.

No. 864, male, May 23, 1898, while uniform dusky on the lower belly, is even whiter on the breast than the last specimen described. There are no black spots on the breast, and only slight traces on the sides of the chest; and no white on the tail coverts either above or below.

Other specimens have the whole breast very broadly spotted. Two (1,240 and 1,211, July 8 and 3, 1898) have the under coverts barred; the back of the neck is black with white bars, and the upper tail coverts marked with white. Throat streaked longitudinally, breast and sides strongly barred, and lower belly dusky mixed with white. The only really white area being in the centre of the abdomen and even here the tips of the feathers are dusky. In the dark series, some specimens are uniform deep sooty, with the head glossy bluish black; others have a golden tinge to the collar; some have the breast feathers obscurely barred, and tipped with purplish or buff.

One bird of the year (September 20, 1897) has the feathers above tipped with pinkish buff, while those of the lower surface, including the under tail coverts are transversely barred with pink and dusky, the bars being very broad and distinct on the coverts.

The downy nestlings may be grouped in three series:

A. Average length 5 ins. July 6, July 10, July 27 (3).

Almost uniform plumbeous; down long like that of a young gull.

B. Average length 8 ins. July 10, July 27 (2).

Similar, with remiges and some body feathers just sprouting.

C. Average length 12 ins. Wings about one-quarter grown, banded feathers on back and breast, but body still well covered with down.

Larus barrovianus (Ridgw.)—Pt. Barrow Gull.

A study of the fine series of thirty-seven specimens confirms Mr. Ridgway's views of the changes in plumage which this bird undergoes.

The series may be grouped as follows:

(A.) Five birds of the year are mottled above with gray, pale buff and white, with more or less gray on the under parts. These specimens are as follows:

578. September 17, wing 16 ins., plumage very dark.

579. September 17, wing 18.40 ins.,

648. September 23, wings 17.25 ins.,

651. September 23, wings 17.50 ins.,

665. September 28, wings 18.20 ins.,

(B.) Nine specimens represent adult birds in the first breeding season. These are nearly white with some buff and dusky mottled feathers on the back and with mottled wing feathers. The dark feathers are not remnants of the juvenal plumage, as would at first be supposed, as fall specimens show them still in the pinfeather sheaths just like the white ones.

The following are in this plumage: June 1, August — (3), September 5 (5). The September specimens are molting the remiges, and the new feathers are white like the old ones, and not gray like those of old adults!

(C.) Four specimens, older birds, or perhaps birds of the same age as the last, but for some reason more advanced in plumage, have the backs partly pearl-gray like fully mature specimens, but are otherwise like the last lot.

July 24. — Molt of wings nearly completed.

Another is very pure pearl gray above, but with the new plumage there are a number of the sooty feathers characteristic of the young bird!

August 20. — Very light above; molt of wings advanced to second primary, old and new remiges pure white, color below dark.

September 5. — Molt advanced to first primary.

(D.) Sixteen specimens are in the normal adult plumage, with no dusky feathers, except a few streaks on the heads of two specimens (September 5). These were taken June 2, June 17, July 24, August 1, August 11, August 24, September 5 (3), September 12, September 17 (2), September 24 (2), September 25, October 5.

(E.) Three others are very peculiar and are perhaps very old individuals. Two females, taken June 8, are pure white all over, with just a tinge of pearl on the back and middle wing coverts.

Another female, August 27, is similar, but is darker below and has slight dusky streaks on head and tail.

Three young in the down, July 13, are grayish white mottled obscurely on the back with plumbeous, face and head distinctly spotted with dark plumbeous.

The plumages of this species are very puzzling, the birds of the year (A), and the normal adults (D), with plain pearl mantle, pure white bodies and gray primaries, are easily picked out. There remain, however, a number of others which may be grouped in three lots: (B) White birds with no pearl mantle, but with many dusky feathers above similar to those of birds of the year, and with pure white primaries; (C) Similar to the last, but with a more or less perfectly developed pearl mantle; (E) Pure white birds with only a trace of pearl and with white primaries.

Individuals of (B) and (E) occur in the breeding season along with normal adults (D), so that it seems likely that (B) and (C) are breeding birds of the first year, differing individually in the state of advancement of their plumage, or perhaps they represent birds of one and two years of age. The curious point is that those which are molting are acquiring white primaries like those they are shedding, instead of pearl gray ones like those of the adult!

(E) may be regarded as extremely old birds or perhaps abnormal specimens, differing in their very pale plumage and white primaries. The possibility of (B), (C) and (E) representing another species is apparently not worthy of consideration.

Larus nelsoni Hensh.—Nelson's Gull.

One male specimen, taken September 5, has the head streaked with dusky, the mantle plain pearl, wing molt advanced to the outermost primary, which has not yet been cast.

Larus glaucescens Naum.—Glaucous-winged Gull.

One male secured July 24 at Pt. Clarence is in the molt. It has a very dark mantle; four outer primaries are the dusky ones of the first year, the rest having been renewed, but only partly grown. The tail is dusky.

Another specimen, a bird of the year, is doubtfully referred to this species. It is a male secured August 15, and is in the molt. The plumage above is very dark for a gull of this sort, much

darker than any juvenal *L. barrovianus*, and exceedingly varied with pinkish, dark brown and white, a few pearl-gray feathers also appear on the back. Below dusky. Old primaries dull brown, probably bleached, new ones deep black, inner ones grayish with black ends and light tips.

Xema sabinii (Sab.)—Sabine's Gull.

Ninety-four specimens representing only adults and birds of the year, with no molting specimens, are in the collection. Birds of the year were taken August 14 (2), August 15 (4), August 20 (3), August 24, August 30 (7), August 31, September 7, September 8, September 9 (28), September 17. Full-plumaged adults, June 23 (3), June 27, July 31, August 3 (2), August 14 (3), August 15 (4), August 20 (3), August 30 (3), September 9 (17).

The above mentioned adults are practically identical and though August birds exhibit some new feathers, with sheaths at their bases, there is no general molt, and no trace of it in the wings.

Eight other specimens, taken August 3 (5) and August 15 (3), are probably breeding birds of the first year. They show a considerable variation, one extreme having white feathers scattered all over the gray, especially on the throat, and the black collar broken with white; the other extreme having the throat entirely white, forehead and cheeks mainly so, nape spotted with gray, and a broad blackish collar on the hind neck.

These birds look exactly like molting specimens, but examination shows no trace of molt and all the feathers are in exactly the same condition. It is such series as this that have frequently misled ornithologists into the belief that the feathers were actually changing color, while, as a matter of fact, the pied plumage, often different in every individual, is nevertheless permanent and unchanged from the time it is assumed until the next molt.

Rissa tridactyla pollicaris Ridgw.—Pacific Kittiwake.

The series resolves itself at once into three lots, nestlings, birds of one year, and those of more than one year. There are none in juvenal plumage. Eight downy specimens taken at Cape Lisburne, August 1, 1897, are pure white below, and on the head and wings; back and rump gray.

The bird in the first breeding season, as I take it, is grayish on

the head, and has a brownish collar on the hind neck, and brown feathers all along the wing from the bend to the extreme tertials. The primaries are also browner than in the adult, the white on the outer ones being restricted to the inner part of the inner web.

A specimen taken July 9 illustrates this plumage, and is just starting to molt. Nine others, August 15 (4), August 24, August 30 (4), illustrate the assumption of the full winter adult plumage.

Five specimens, June 2, July 25, July 27 and August 1 (2), are in adult nuptial plumage, with pure white heads while seventeen others, August 1, August 14, August 15 (3), August 20 (3), August 24, August 30 (7), August 31 are old birds in annual molt.

One very curious specimen taken August 14 is very pale, being much lighter than the ordinary adult. The wings also are much lighter and there is no brown or black on any but the two outermost primaries, and there only on the outer web. This is an exactly parallel case with the two white *Larus barrovianus*, and is probably a very old bird, or an abnormal albinistic specimen.

Pagophila alba (Gunn.).—Ivory Gull.

One male in nuptial plumage was secured June 2, and seventeen adults just completing the molt, August 28 (2), August 30 (2), August —, September 1 (11), September 17.

Three young of the year agree well with Ridgway's description (*Manual N. A. Birds*), but the sides of the face, throat and top of the head are somewhat spotted with gray. These were taken September 7, 16 and 25.

A note on the label of a September specimen (482 ♀ juv.) states that the breast and abdomen were rose-tinted.

Rhodostethia rosea (Maegil).—Ross's Gull.

Three specimens of this rare bird were obtained: No. 501, Sep. 9, 1897, a young male like the second plate in Murdoch's Report; No. 649, Sep. 23, 1897, an adult male in winter plumage, like the first plate in the above work, but with a concealed black collar; and No. 1,245, June 9, 1898, an adult male in full nuptial plumage, bright pink below, white on the head and neck above, and a delicate black collar encircling the neck.

Sterna paradisæa Brünn—Arctic Tern.

Ten adults taken June 23 (3), July 24, 27 and 31, August 14 (2), August 30, September 7, are quite uniform in plumage and show no signs of molt whatever. This seems to render it doubtful whether these birds molt at all before their autumnal migration. Birds of the year are represented by a beautiful series representing all stages from the recently hatched nestling to the fully plumaged fall bird. The downy young (July 10) is mottled above with dull black and buff, with two well-marked longitudinal patches of the former on the head. The throat is dark plumbeous and the rest of the lower surface snowy white.

Eight specimens illustrate the growth of the young bird until the flight feathers are about half-grown and the plumage of the back and breast about half attained, the head and throat still remain covered with down, true feathers showing only on the ear coverts. The throat at this period is much lighter and the down on the belly is not so white (series secured July 26 (4), July 27, August 21 (2).

The full-grown bird of the year is represented by six specimens, August 14, August 30, September 7 (3), September 9. The youngest of these has the feathers of the back broadly bordered with dull black and buff, exactly the shades of the downy young, while below the neck is tinged with buff.

These tints all wear away by abrasion and bleach out as the bird grows older, and the later specimens show very indistinct plumbeous and whitish borders.

Diomedea nigripes Aud.—Black-footed Albatross.

Eleven specimens were secured July 5 and 11, five males and six females.

The principal variation exhibited by this series is the presence of buff edgings to the feathers on the belly of many of the specimens, and the pied appearance of the upper surface owing to the irregular mingling of feathers of different ages and different degrees of bleaching. One specimen is nearly white on the lower belly and between the legs.

Seven of the birds are molting the primaries; four of these are progressing in the usual way, the innermost quill being renewed first, but the others exhibit an exceptional order of molt. In Nos.

2 and 10 the second, third and fourth primaries are only partly grown, the old feathers having been but recently cast, but the first primary (outermost) and the six inner ones are of the old plumage. In No. 3 the fourth, fifth and sixth feathers have been renewed and are only half grown, but the others have not been molted, while in No. 5 the first and second are renewed, but none of the others. Furthermore, they are full-grown in one wing and only partially so in the other.

Branta nigricans (Lawr.)—Black Brant.

A series of seventeen specimens.

Five breeding birds, June — (2), June 6 (2), June 5, are brownish black, lighter than fall birds. Feathers mottled below with pale edgings and much worn, especially on the sides. One example seems younger than the others, and has whitish tips to the wing coverts. It is probably a one-year-old bird. Three fall specimens, August 24, September 17, September 20, are blue black below with no lighter edgings. A scattering of old brownish feathers remains on the upper parts, but the molt is apparently over. One bird of the year, August 30, has white tips to the wing coverts and feathers of the lower surface, while the general coloration is grayish, and there is no white collar.

Eight downy young, July 10, are rather light plumbeous, paler in the middle of the abdomen and nearly white on the throat. There is a rather obscure dark breast band, and narrow black and white ring on hind neck, while the top of the head is blackish.

Chen hyperborea (Pall.)—Lesser Snow Goose.

A male and female taken June 30 are in very worn plumage, the tips of the primaries in the female being bleached to a light brown, though the covered portions remain jet black.

Anser albifrons gambeli (Hartl.)—White-fronted Goose.

Two specimens were obtained. A female, June 3, is in good plumage with a few black feathers on the lower parts. Another, June 14, is very much worn, but otherwise similar.

Merganser serrator (Linn.)—Red-breasted Merganser.

Two males secured July 27, at Pt. Clarence, are of much interest, being in the summer molting plumage.³ They are like the

³ See Stone, *Proc. A. N. S.*, 1899, p. 467.

nuptial plumage except the head and neck, which resemble the dress of the female; crest dull brown, breast dull gray, many of the black head feathers and pink and black breast feathers of the nuptial plumage still remain, but are easily brushed off, being just ready to drop. The flight feathers have not yet been molted.

Somateria v-nigra Gray—Pacific Elder.

A series of twenty-five specimens beautifully illustrates the plumage changes of this species. The females include three adult breeding birds, May 31 and June 3 (2), and five worn breeding specimens, August 24, August 30 (4).

In the latter the tips of the wing feathers are bleached almost white, while the feathers of the belly are sooty with the bars nearly obliterated. These may possibly be new feathers as they are much less abraded than those of the breast where the bars remain distinct.

A number of the wing coverts and scapulars seem to be renewed at a spring molt, as in the June birds some are full and dark while others, side by side with them, are pale and worn. The same difference can be detected in August specimens, where the former feathers are slightly worn and the latter are exceedingly abraded, only the dark central portion remaining. These feathers may, however, possibly persist through the winter from the last year's plumage, as indicated below.

One specimen, taken September 24, has completed the molt, and the new wings are about half grown. A few old feathers remain on the breast. The belly is plumbeous and very mottled and irregular in appearance as if only half through molting. No barred feathers are to be seen such as constitute the spring plumage, so it is probable that the molt of the belly is the last to be completed.

The male series consists of eight breeding specimens, May 31 (2), June 2, June 3 (5), and seven birds in the transition plumage with wings fully molted and the new feathers half grown; these were taken September 17, September 23 (5) and October 6. One other, August 20, retains the old wing feathers, and has not quite acquired the full transition plumage on the head, remains of the nuptial feathers being seen on the lores and crown.

The last of the series, October 6, shows the new winter plumage

supplanting the dull transition dress. The breast is nearly molted, but is still flecked with brownish feathers, while the new green feathers of the face may be seen just bursting from the pin-feather sheaths.

The transition plumage is as follows:

Belly and wings as in nuptial plumage. Head and neck dull brown, streaked with black, with indistinct lighter areas on the head, breast mottled, feathers generally white in centre, black at tip and barred with brown, some all brown and some all white. Scapulars blackish or brownish, varied with white.

Somateria spectabilis (Linn.)—King Eider.

The King Eider is represented by a series of 107 specimens.

Twelve are downy nestlings, uniform plumbeous, except for a lighter area on each side of the face. There is no marked difference in the plumage of the young Eiders, though each of the four species can be told at a glance by the feathering at the base of the bill, this character being quite as distinct as in the adults.

Three others, August 1 (2), August 18, have the down about half replaced by the juvenal plumage.

The young of the year include fifty-one specimens, August 30, September 5, September 6 (4), September 8 (3), September 17 (39), September 24 (3). These exhibit no variation except that the males are less buff below, with the tips of the feathers inclining to white, while all the breast feathers have distinct white cross-bars as well as black ones.

Of the adult females there are six in full nuptial plumage, taken May 23; three in worn plumage, August 1, August 11, August 24, and six which exhibit more or less molt in the body plumage. None are renewing the flight feathers, which are often exceedingly worn and bleached. These were taken August 10, August 24 (3), August 30, September 17.

Of the adult males twenty-three are in full nuptial plumage, May 23 (15), May 26 (4), May 27 (3), June 1 (1). The last is peculiar in having the V on the neck open in front, forming two separate streaks. Two later specimens, August 24 and 30, illustrate the change to the transition plumage. The breast is speckled all over with the new brown white and black barred feathers, the interscapulum is largely speckled with black, and the head and

neck are being covered with dull brown black-tipped feathers. The pattern of the green and blue areas, as well as the black V are still clearly apparent, though the feathers which remain on these parts are very easily displaced.

Another specimen, August 24, has fully assumed the transition plumage, but in none of the three has the molt of flight feathers begun, they are very much worn and bleached.

Arctonetta fischeri (Brandt)—Spectacled Eider.

Thirty-six specimens represent this species. Five downy young taken July 28 are plumbeous with the spectacle-like mark clearly indicated in dull buff.

Nineteen are birds of the year, taken September 8 (7), and September 17 (12). They are black above, feathers broadly edged with fulvous buff, except sometimes on the rump. Head and neck narrowly streaked with black and buff, with throat and large eye patch plain ochraceous; below vinaceous buff finely vermiculated and irregularly banded with blackish.

They differ from the adult female in being irregularly mottled below instead of distinctly cross-barred, and in the lack of light cross-bars on the rump.

The adult female is represented by five specimens, one June 2, in full nuptial plumage, the rest August 30 and September 8 (3), showing much wear and bleaching and some renewal of body feathers, but no molt on the wings.

Of the adult male there is a series of seven in full nuptial dress, May 31, June 1, June 3, June 22, June 27 (2), June —.

These vary much in the depth of green between the eye and the bill, some being very pale and some brownish olive.

One interesting specimen taken September 17 is in the transition plumage, and the new flight feathers are just full grown. No similar specimen has ever been described so far as I am aware. The head and neck are gray streaked with black, front and cheeks whitish, eye spot gray, centre of throat white, more or less brown black-barred feathers on the breast, back and scapulars largely gray, some white beneath the shoulders. Lower parts gray.

Eniconetta stelleri (Pall.)—Steller's Duck.

Sixty specimens are contained in the collection. Twelve are downy young taken July 28. They are much darker than the young of the other Eiders.

Twenty-three are birds of the year, August 30 (14), September 4 (4), September 5, September 8 (2), September 17, and one without data.

They have no black on the throat, lower parts are transversely barred with black and chestnut, the individual feathers being white at the base, with a black band and chestnut tip. The black band is sometimes transverse, sometimes curved, and sometimes forming an angular V-like spot; this variation causes much difference in the appearance of the plumage of different birds.

The adult female is represented by nine specimens, June —, June 9, August 11, August 26 (5), August 30. They show much variation in the markings of the under surface, and the late August specimens exhibit molt in the body plumage, but not in the flight feathers.

Thirteen adult males in nuptial plumage were taken as follows: June 25 (4), June 27 (2), June 22 (2), July 2, June 9 (2), June 13 (2).

One peculiar male, June 25, is exceedingly worn; speculum dull brown without a trace of blue; whole plumage dull and mottled, eye region and cheeks whitish, as is also the breast. Throat black but not glossy. This bird appears like a bird of the year which never molted properly in the spring.

Clangula hyemalis (Linn.)—Old Squaw.

Forty-four specimens.

Eight downy young collected July 28, to illustrate variation with age may be grouped in three lots.

A. Throat and belly white, with a brownish breast band. Glossy black above, with a brownish cast caused by mixture of brown filaments. A black mark below and behind the eye.

B. Browner and more faded, abdomen darker owing to plumbeous color of later down.

C. Whole lower surface with strong plumbeous cast, quills not yet sprouted.

Ten birds of the year are in the familiar plumage representing that stage, September 8, September 16 (2), September 24 (7).

Adult females were taken, June 8 (2), July 31, September 8 (2), September 24, October 5. The fall specimens have nearly completed the molt. The October bird has the head nearly pure white with very obscure crown and cheek patches.

There are nineteen adult males. Of these, five are in nuptial dress, May 31, June 2, June 8 (3). One of these has the top of the head white, some black, some intermediate.

Three taken August 24 are in the molt. The wings are nearly full grown, and the tail about one-half; the sides of the body are deep pearl gray.

Six others, August 24, August 30, September 8 (3), September 17, are similar, but the neck and breast are more mottled with new feathers and the pearl gray scapulars are beginning to appear. Other specimens are as follows:

September 17 and 24 (3), scapulars all pearl gray, head and neck nearly white, except cheek patch.

October 8, head and neck almost pure white, no cheek patch.

These species apparently acquire no "transition" body plumage during the molt of the flight feathers, as is the case with many ducks.

Oidemia deglandi Bonap.—White-winged Scoter.

One male in full nuptial plumage, taken June 22.

Phalacrocorax pelagicus robustus Ridgw.—Violet-green Cormorant.

One male specimen taken June 8, at Pt. Barrow. It is entirely destitute of white plumes.

Grus canadensis (Linn.)—Little Brown Crane.

Two specimens, still in worn, very rusty plumage, taken June 25.

1,163 — length of culmen, 3.60; wing, 17.75 inches.

1,164 ♂ length of culmen, 3.50; wing, 16.50 “

Crymophilus fulicarius (Linn.)—Red Phalarope.

A series of eighty-five of these birds is in the collection, which illustrates very nicely most of the stages of the molt.

Twenty adult males in nuptial plumage obtained June 3 (3), June 4 (13), June 7 (2), June 8, June 23, exhibit considerable variation in plumage. Not a single specimen is uniform rufous beneath, though one (1,158) is very nearly so. The majority have a considerable sprinkling of white feathers, and in several there are more white than rufous. The lightest specimen has some gray feathers scattered over the back, while the throat and sides of the face are white. Others have these parts more or less gray, while the back

is uniformly streaked with black and buff. The darkest of all has the sides of the face chestnut rufous and the gray throat much restricted. These light feathers are not indications of molt, but were evidently acquired at the same time as the rest of the plumage.

The adult female is represented by a series of eleven taken June 4 (10), June 23. There is much less variation than in the male, and a greater tendency to uniform coloration below, four of the specimens being without any white.

Two males, taken July 31, and five secured August 3 are molting the body plumage, and show all gradations of gray mottling above and white beneath, while a female (171), taken August 14, is entirely gray and white, except a few rusty feathers on the belly and vent, and striped ones on the rump. In none of the above males is there any trace of molt of the wing feathers, and in all but one they are in good condition, not perceptibly more worn than in the June specimens.

In the female the three outer primaries are distinctly fresher and darker than the others, and the middle pair of rectrices are being renewed, as well as the three inner primaries on one wing.

In another molting male (285), taken August 20, the same difference is seen in the outer primaries, and, furthermore, the fresher feathers still have the sheaths around their bases, showing that they have just been renewed, and the same is true of the three innermost primaries. This molt is, however, only seen in one wing, the other retaining the old feathers throughout. In body plumage this bird has nearly finished the molt.

Birds of the year are illustrated by eight downy young, July 3 and 4 and 27 (4), and 37 in the juvenal plumage, taken July 24, August 3 (4), August 10, August 24 (16), August 26 (10), August 30 (2), September 5, September 8 (2). Those taken July 24 and August 30 still retain traces of down about the head, while the later ones all show more or less gray feathers above, though none appear to have completed this molt. There is no molt in wing or tail, and the long black buff-edged tertials seem to be retained through the winter, which thus serve as an easy distinguishing mark in separating them from winter adults in which these feathers are gray. The dark tinted feathers across the breast also serve to distinguish them.

Phalaropus lobatus (Linn.)—Northern Phalarope.

Three specimens were obtained, an adult male in full nuptial plumage, June 15; a very much worn specimen, July 27, and a bird of the year, July 28, which still retains a considerable amount of down about the head. Three full-grown birds of the year, August 7 and August 17 (2), 1898.

Arenaria interpres (Linn.)—Turnstone.

Three typical breeding birds were taken respectively May 29 (♂), May 31 (♀), June 2 (♂). Two others secured July 11 (♂ and ♀) are more worn and the female is beginning to renew the plumage of the back, the new feathers being exactly like the old ones. Unfortunately, no later adults were obtained.

A large series of young are in the collection. One secured June 4, 1898, at Pt. Barrow, and two July 24, 1897, at Port Clarence, are still decidedly downy about the head and neck, though otherwise the juvenal plumage is well advanced.

Fourteen others are practically uniform and are in full juvenal plumage, taken as follows: August 10 (5), August 13 (2), August 14 (2), August 20, August 26, August 30, September 4 (2).

Eudromias morinellus (Linn.)—Dotterel.

One specimen taken at King's Island, July 23, 1897, an adult female, just beginning the molt. The three outer primaries still remain, and but little body molt is yet apparent.

This is the first record of this species for North America; in fact, it seems to be very rare even on the Asiatic coast. One was recorded by Cassin from Japan, but Mr. Swinhoe, who reviewed his paper in *The Ibis*, 1863, p. 444, seriously doubted the correctness of the identification, with no reason whatever. The result is, that wherever the record is cited it is queried. The specimen referred to is still preserved in the Academy's collection, and is unquestionably a Dotterel in first winter plumage.

Squatarola squatarola (Linn.)—Black-bellied Plover.

Only six specimens were obtained, but they are quite interesting as throwing some light on the vexed question of the molt in this species.

An adult male and female, obtained June 26, have lost the two innermost primaries and are renewing the plumage of the back, the new feathers being gray edged with whitish. Two other males,

July 26, 1898, are in about the same condition. Another specimen, taken August 20, has a considerable number of similar feathers on the back, but there is no sign of molt and the primaries are so worn as to make it extremely unlikely that they were recently acquired. Another bird in the Academy collection, No. 34,545, Buckland river, Alaska, August 1, 1895, has gray feathers scattered through the plumage of the back, but no other trace of molt, and is very close to some of Mr. Brewster's black-bellied fall specimens, from the New England coast, which were courteously loaned to me for examination.

All the birds above mentioned have black bellies and show no indication of shedding this plumage, although some of them (notably some in Mr. Brewster's series) have acquired some white feathers. These may, however, have been similarly colored in spring as we often see mottled birds at this time.

While it seems doubtful whether the flight feathers are always molted during the sojourn of the bird in the far north, it is certain that in some cases a part of them, at least, are renewed. Furthermore, all the material which bears upon the question of the molt of the adult indicates that a number of gray feathers are acquired on the back after the breeding season, though the molt is far from complete, and that the black under surface is retained at all seasons, probably becoming purer with age. This is the theory advanced by Mr. Mackay (*The Auk*, 1892, p. 143), and the material before me corroborates it in every instance.

The sixth specimen obtained is a bird of the year, with round yellow spots above and triangular shaft streaks below.

Charadrius dominicus MÜLL.—American Golden Plover.

Twenty-eight specimens of this bird are contained in the collection representing various ages and plumages.

Between the adult male and female, I fail to detect any appreciable difference in plumage. Eleven adults taken June to August serve to illustrate the beginning of the annual molt. One taken June 1 and two secured June 2 show no evidence of molt whatever, and may be regarded as typical breeding birds. They are uniform black below, but show great variation in the plumage of the upper surface, many of the old abraded winter feathers being still retained, as already noticed by Nelson, while some of the

earliest acquired spring feathers are already beginning to fade and become ragged. Four later specimens (June 18, 27 (2), 28) show much greater abrasion, and a general bleaching of the yellow spots to whitish, while beneath the plumage of the back and head new feathers are everywhere to be found, beginning to expand.

In the next series (July 24, 27 and August 1), these feathers are fully grown and a number of white and gray feathers are scattered over the breast and belly. There is, however, no trace of molt in the remiges, rectrices or greater wing coverts in any of the birds, and it seems that they are not lost till later. One of the birds secured August 1, while much mottled with light feathers below, has undergone scarcely any molt on the back, where the plumage is mainly composed of the much abraded spring feathers.

Sixteen specimens are in full fall plumage (August 1, August 18 (8), August 20 (7)). They vary considerably in the brightness of the yellow spots and the extent to which they are abraded, but cannot be separated into old and young (if both *are* contained in the lot?) by any tangible character. There is no trace of old feathers on a single specimen, while all have apparently molted the flight feathers. The bellies are without a trace of black.

One nestling is bright golden above mottled with black, whitish on the back of the neck and everywhere below.

Tryngites subruficollis (Linn.)—Buff-breasted Sandpiper.

One female specimen obtained June, 1898, in full nuptial plumage, and a male, August 13, 1898, in winter plumage.

Tringa canutus Linn.—Knot.

Six specimens in full first winter plumage taken July 31 (5) and August 17.

Tringa cones (Ridgw.)—Aleutian Sandpiper.

Three specimens in winter plumage were obtained at Port Clarence, August 22, 1898.

Tringa alpina pacifica Coues—American Dunlin.

A fine series of sixty specimens of the Dunlin is contained in the collection, and as the adults are represented throughout the molting season, the change of plumage in this species is excellently illustrated.

Nine adults, June 2 (2), June 4, June 7 (2), June 8 (4), represent the height of the nuptial plumage and are like the latest spring migrants on our coasts.

One taken June 27 illustrates the beginning of the molt, having shed the five inner primaries. The new feathers which have not yet broken from the sheath seem to be all at an equal stage of development. The next specimen, taken July 31, shows the two outermost primaries about half grown, while the others are fully grown. In this bird, too, the wing coverts have all been renewed, and upon raising the plumage on the back many new feathers are to be seen, the earlier specimen showed no trace of a molt, except in the primaries.

A series of fourteen molting adults (August 10 (2), August 13 (4), August 18 (3), August 20, August 24 (2), August 26, September 1), resemble the last in the molt of the wing, though the later ones have all the remiges fully grown. The extent of the body molt is very variable, some of the later specimens being still quite rusty above, while earlier specimens are quite gray, all still show the black on the belly, though one taken August 24 has nearly lost it.

Eight downy young were collected July 6, 8, 10 and 23. They are mottled with chestnut, black and buffy white above with little buff dots scattered about on the tips of the plumes. Forehead whitish with a central black stripe forking into two on the top of the head, and passing into chestnut brown, broad buffy white superciliaries, which unite below the occiput, and tawny postocular stripe, strong buff wash below the eye. Under parts white with a buff collar across the neck.

One young bird, taken July 16, has the body well covered by the first winter plumage, but is still quite downy on the head, breast and flanks. The remaining twenty-eight are all fully grown, and in the usual winter plumage, August 10 (5), August 21 (8), August 24, August 18, August 20, August 26 (6), September 1 (5), September 4.

Tringa maculata (Vieill)—Pectoral Sandpiper.

A series of twenty-six specimens was obtained. Ten are breeding males, with the throat sack enormously extended, spreading the feathers to such an extent that the black bases are clearly visible.

These were obtained May 30 (2), May 31 (2), June 2 (4), June 8 (2). Six female specimens in nuptial plumage were secured May 30-June 7, and a much worn specimen was obtained July 31, which is beginning to molt the plumage of the back and breast, though there is no evidence of molt elsewhere.

Five specimens are in winter plumage (July 31 and August 20 (4)). These show no variation, except that No. 288, August 20, is more deeply colored on the breast than any of the others. I am uncertain whether these are adults or birds of the year. If the former, then this species molts before migrating southward, like *A. alpina pacifica*, but not nearly so early.

Four downy young are labelled *T. maculata*. They do not differ from young *T. alpina pacifica*, except in rather darker coloration.

Tringa bairdii Coues—Baird's Sandpiper.

A large series of breeding birds was obtained as follows: May 28, May 30, June 2 (3), June 7, June 8 (7). These are quite uniform in plumage, though the later ones are a little more worn.

Three specimens, taken June 11, June 15, June 27, show more or less new body feathers both above and below, when the old plumage is raised, and another secured July 11 has nearly completed the molt of the head, breast and back. In none of these, however, is there a trace of molt on the wings or tail.

Eleven birds in first winter plumage were secured, July 31 (8), August 1 (2) and September 4. These differ from the winter plumage of the adults in the conspicuous white margins to the feathers of the back and the greater amount of streaking on the breast.

Ten young in the down were taken July 16, 18 and 27; they are darker than young Dunlins, with the brown tints darker and not so rufous, while the light mottlings are whiter and less tinged with buff. Two others taken August 1 are intermediate between the down and first winter plumage.

Tringa friscicollis Vieill.—Bonaparte's Sandpiper.

Five of these birds were taken as follows: June 2, June 8 (2), June 14 (2). All are in full nuptial plumage, and show no sign of molt.

Ereunites pusillus (Linn.)—Semipalmated Sandpiper.

A series of thirteen specimens was obtained. A breeding bird, June 6, is rather worn, without a trace of chestnut tints on the

plumage. Two others, obtained July 8, show a considerable renewal of the plumage of the back, but no molt in the flight feathers. A female from Port Clarence, July 24, is similar. The other specimens appear to be birds of the year, one from Pt. Barrow, August 12, and another, Port Clarence, July 24, still retain much down about the head, while two others from Point Hope, July 31, and one from Port Clarence, July 24, are in full winter plumage; also July 31, 1898 (4). The shortness of bill in the Pt. Barrow birds is extreme, measurements being as follows: No. 1,243, .65 in.; No. 1,028, .74; No. 1,242, .70 inches.

Those from Point Hope measure No. 88, 1.00; No. 87, .80; and from Port Clarence, No. 29, .74 inches.

Limosa haemastica (Linn.)—Hudsonian Godwit.

Two specimens, obtained July 14, are slightly mottled with new gray feathers above and below, and show a number of pin-feathers beneath the plumage, but there is no indication of molt in flight feathers.

Limosa fedoa (Linn.)—Marbled Godwit.

One bird of the year, obtained August 26.

Calidris arenaria (Linn.)—Sanderling.

Six breeding specimens, June 6 and 7, and one bird of the year, August 27.

Macrorhamphus scolopaceus (Say.)—Long-billed Dowitcher.

One adult female in worn nuptial plumage, secured June 30, and twelve birds of the year, taken August 1, August 20 (8), August 24 (2), August 26, represent this species.

The bills of the latter series range from 2.25 to 2.95 inches, but there is no variation in the plumage.

Lagopus rupestris (Gm.)—Rock Ptarmigan.

Four specimens only were collected.

One male, taken in April, is in worn winter plumage, while two others, June 25 and 29, are extremely worn, and of a dirty brownish white. There are new brown feathers on top of the head and on the back, but apparently no general molt, and considering the very late date it seems that the molt must have been arrested in some manner in these specimens.

A female, taken June 26, is in almost full nuptial plumage, but

retains a few white feathers below. There is no molt of the flight feathers.

Lagopus lagopus (Linn.)—Willow Ptarmigan.

Sixteen adult specimens illustrate the winter and nuptial plumages.

Twelve of these, October 6 (2), October 15 (3), October 9 (7), are white, with a few old rufous feathers about the head. Two others, January 11 and March 21, show effects of wear, but are still in the white dress.

The next specimen, April 18, is very much worn with many new rufous feathers coming in on the head and neck, while in the last, June 22, the nuptial plumage is completed except a few old white feathers on the belly.

In none of these is there any indication of a spring molt of the primaries, secondaries or greater coverts.

Falco rusticolus gyrfalco (Linn.)—Gyr Falcon.

Two specimens, September and November 7, 1897.

The former has scarcely any transverse barring above, and is very dark below. The latter is strongly barred above with buffy, and is white below streaked with dusky.

Asio accipitrinus mcilhennyi Stone—Arctic Short-eared Owl.

A series of nine males and two female Short-eared Owls were secured, June 2–22; have already been described (*Proc. Acad. Nat. Sci.*, 1899, p. 478).

Nyctea nyctea (Linn.)—Snow Owl.

Eleven adults, taken June 3–27, are contained in the collection. Six of these are marked male and four female, while one is unsexed. There is great variation in the amount of dark barring on the plumage, but the nearly pure white ones are always males, and the darkest ones always females; among the intermediate specimens there are two specimens, one male and the other female, which are almost alike in plumage.

Three of the sexed females are nearly denuded of feathers on the breast and abdomen, but the other as well as the unsexed specimen which, from its measurements appears to be a female, are well feathered and were evidently not nesting.

The whitest example is No. 1,089, taken June 12, the only markings on it are small black tips to the outer primaries, a few dull

streaks on the crown, and an obscure grayish spot on the wing-coverts. The lightest female is decidedly white, interscapulum, back and rump pure white, tail slightly spotted, wings and coverts irregularly but not heavily barred, beneath the bars are few and faint, and confined to the middle of the abdomen. No molt was observable in any of the series. The wing measurements are as follows:

	Ins.		Ins.
1,115. ♂, June 16,	16.00.	992. ♀, June 3,	17.75.
1,192. ♂, June 27,	15.50.	1,127. ♀, June 17,	17.00.
1,090. ♂, June 12,	16.00.	1,128. ♀, June 17,	17.10.
1,089. ♂, June 12,	15.60.	999. —, June 5,	17.80.
1,117. ♂, June 17,	15.25.	1,051. ♀, June —,	17.10.
1,118. ♂, June 17,	15.25.		

A series of twenty-four nestlings in various stages is of particular interest as it illustrates two distinct conditions of the downy plumage.

The birds may be grouped in four lots:

A. Average length of skin 4.25 ins., June 25 (1), July 6 (5), July 10 (2). Pure white down all over the body, the largest individuals showing dusky traces on the wings.

B. Average length 6.50 ins. July 6 (9). White down not continuous over the body, all the feather tracts distinctly dusky with the new plumbeous down.

C. Average length 8 ins. July 6 (3), July 10 (2). Prevailing color dusky plumbeous, plumes all tipped with white, these tips being, of course, the earlier white down.

D. Average length 12 ins. July 10 (2). Thickly covered everywhere with plumbeous down, much of it with white tips. Some fluffy banded plumbeous scapular feathers and the wing quills just sprouting.

Horizopus richardsonii (Swains.)—Western Wood Pewee.

One female secured July 1, 1898, materially extends the northward distribution of the species. This bird is interesting, as it is renewing the outermost primary of the left wing which had evidently been accidentally lost. Instances of renewal of rectrices are common, but this is the first instance that has come to my notice of the renewal of a remex.

Calcarius lapponicus alascensis Ridgw.—Alaskan Longspur.

The Longspur is represented by a series of ninety-nine specimens, eighty-one from Pt. Barrow and eighteen from Port Clarence. Compared with a series of Greenland birds, they are perceptibly lighter on the upper surface, the black lines being much narrower. In no other respect, however, can I see any material difference, and the absence of rusty tints on the wings does not seem to be a constant character.

Twenty-eight breeding males (May 28 (16), May 30 (9), June 2 (2), June 11 (1)) present a very uniform appearance. In nearly all the chestnut of the neck, black of the throat and light post-ocular stripes are very clear and have entirely lost the buff edgings. In many, however, the light tips remain on the lowest of the black breast feathers and in none is the black cap entirely pure.

Nine breeding females (May 28 (5), May 30 (2), June 2 (1), June 14 (1)) show considerable variation in the brightness of the black chest band and the chestnut collar, and in all but the last abrasion is much less advanced than in the males. It seems probable that the dull specimens are younger birds.

Six males secured at Port Clarence, July 24 and 25, are in the midst of the molt. In three of these the fourth primary has just been shed, in the others, the third, second and first respectively.

In the first two specimens the three old outer rectrices are still retained, in next two only the outermost pair, and in the last the entire tail has been shed. One or two of these birds show the culmination of the abrasion on the crown, which is pure black, a condition not noticed in any of the June specimens. It is evident that this process continues until the molt is actually under way. Another point of interest is that many of the new feathers on the chin are white almost or quite to their bases, while these feathers in May and June specimens are jet black, indicating a slight molt in spring, which is well known to occur in many *Fringillidæ*.

Two molting females from Port Clarence, July 23 and 24, are in the same stage as the first males above referred to.

Nineteen specimens are in the juvenal plumage and thirty-five in full winter dress.

Four specimens (July 8, 18 (2) and 27) have only half-grown tails, while two secured at Port Clarence, July 24, are in perfect juvenal plumage, the molt to winter plumage follows almost imme-

diately, as all the other birds (July 24 to August 18) show it in progress. The new feathers first become noticeable on the rump, and the molt is well advanced here before it is apparent on the lower surface.

The fall specimens are separable at once into males and females by the large amount of black on the breasts of the former, but I fail to distinguish birds of the year by any external characters. Indeed, the only noteworthy variation seems to be an occasional increase in the black on the chest of the females, a tendency toward the plumage of the male not infrequently noticed in various birds.

Calcarius pictus (Swains.).—Smith's Longspur.

One male secured June 11, 1898, presents no peculiarities. Wing measures 3.58 ins.

Passerina nivalis (Linn.).—Snowflake.

A series of forty-three specimens, all from Pt. Barrow, except three immature birds taken on King's Island. These correspond excellently with a series of Greenland birds obtained on the Peary expeditions, and now in the collection of the Academy, and show no tendency whatever toward *P. nivalis townsendi* Ridgw., of the Aleutian Islands.

Of nine breeding males, taken May 3 to June 11, 1898, six are nearly uniform in coloration, the heads being pure white, and the intercapulum with only slight whitish edgings, these having practically disappeared in the latest specimen in the series. In none of these is there any trace of brown or rusty tints, though the remaining three show this to a varying degree. No. 853, May 3—the earliest specimen—exhibits slight rusty tips to the feathers of the head and the innermost wing coverts, as well as a spot of rusty on each side of the breast. In No. 856, May 6, the rusty is confined to the wing coverts and the rump, while in 855, May 6, the whole upper surface is suffused with rusty. The abrasion of the tips in this bird seems to have been delayed for some reason, and it forms a striking break in the series which otherwise illustrates beautifully the gradual progress of this abrasion during the month covered by the specimens.

Two breeding females, May 30 and July 3, show practically no trace of rusty tints; the later bird, though very much worn, shows no indication of molt.

Only five adult males illustrate the molt, and the early fall plumage. One of these (302, August 21) is in the midst of the molt, six new primaries are full grown and the others of varying lengths, the old ones being all shed, the old secondaries still remain, while the tertials and nearly all the body feathers are new. Three specimens, taken August 26, and one September 4, are in full fall plumage, the remains of the sheath on the outermost primary being the only sign of molt.

Nine females are in full fall plumage, of which four (August 26 (2), September 4 and September 11) retain remains of the sheath on the base of the outermost primary, while the rest (August 30 (2) and September 4 (3)) show no trace of it, and may be birds of the year.

Eighteen unquestionably immature birds illustrate the changes from the nestling to the full fall plumage.

Five nestlings, July 10, Admiralty Bay, were collected to show the progress of plumage growth. The youngest is quite white down the centre of the abdomen and brownish on the sides, the older birds exhibit a buffy suffusion over the whole lower surface. The neosoptiles on all are dull plumbeous.

Three males from King's Island (July 23) are in full juvenal plumage, though in two of them the tail is not fully grown. Four specimens (August 15, 21, 24, September 3) illustrate the progress of the postjuvenal molt on the back and rump, while in two others, August 21 and September 3, it is completed.

Of two immature females taken August 14, one is beginning to molt, while the other has finished, and the same is true of two secured August 21.

In examining this series, I discovered that the primary coverts were an excellent index to the sex and age of the bird, as they are always white in the male—even in the fledgling—and dull black in the female. Young males always have a spot of black on the tip of each feather, the pure white feathers replacing them at the first *annual* molt. By this means we can separate the male and female fledglings, and distinguish the males of one year from the older individuals in the spring-breeding series.

Acanthis hornemannii exilipes (Coues)—Hoary Redpoll.

A series of sixteen specimens taken June 18–26 exhibits very little individual variation. One male is bright rosy pink over the

whole breast and down the sides, as well as on the rump, but the others, both males and females, present a very uniform appearance. Unfortunately, none were secured in the molt.

Ammodramus sandwichensis alaudinus (Bonap.)—Western Savanna Sparrow.

Six breeding specimens, taken June 7 to July 27, and three in winter plumage, August 26 and 27, illustrate this species. None of them show any trace of molt.

Zonotrichia leucophrys nuttalli Ridgw.—Nuttall's Sparrow.

One female specimen, secured June 10, 1898, is typical in every way. Wing measure 2.90 ins.

Dendroica coronata (Linn.)—Myrtle Warbler.

One male obtained from a native near Pt. Tangent, June 3, 1898.

Budytes flavus leucostriatus (Hom.)—Siberian Yellow Wagtail.

One adult male obtained June 11, 1898, a young bird just completing the molt into the winter plumage, and another young, August 8, 1898.

Hylocichla aliciae (Baird)—Gray-cheeked Thrush.

An adult female, found dead on the ice near Pt. Tangent, May 27, 1898, and a male secured June 10, 1898, at Pt. Barrow. The latter is in exceedingly worn plumage, the ends of the primaries where they project successively one beyond the other being so bleached that the pattern of the covering feather is clearly marked on each.

MAMMALS.

Twenty species of Mammals are represented in the collection by 855 specimens. Seventeen of these are given in Murdoch's paper, though the nomenclature varies considerably. Of the other eight mentioned by that author, the Red Fox, Wolverine, Barren-ground Bear and Mountain Sheep were given on the basis of skins, etc., in possession of the Eskimos, and were admittedly not obtained at Pt. Barrow, while *Elephas* was of course fossil. The other species were the Ribbon Seal, Narwhal, and Killer Whale. Of these no specimens are in the McIlhenny collection.

Three other species were, however, secured, which are apparently reported for the first time from Point Barrow, the Fur Seal, Least Weasel and Canada Lynx.

Balæna mysticetus Linn.—Bowhead Whale.

Portions preserved in formaline.

Delphinapterus leucas (Pallas)—White Whale.

One skeleton and ten skulls, one an embryo. Mr. McIlhenny's measurements show the average length of males to be 15 ft. 3 ins. (ext. 16.4–12.1), and of females 12 ft. 11 ins. (ext. 13.9–11.7).

Rangifer arcticus (Rich.)—Barren-ground Caribou.

A series of twenty-four of these animals was secured; three skeletons, eight skins with skulls and thirteen additional skulls.

Some of the horns are in the velvet, which is dark blackish brown, with scattered white hairs near the basal portion.

The youngest examples have straight or slightly incurved "spike" horns eight to eleven inches long. The next has the horns incurved, thirteen inches long (chord measurement) with a forward tine six inches long near the base. Other horns of the same size are slightly forked at the tip with the forward tine also sometimes forked; while one specimen has the tip of one horn somewhat flattened. Another specimen slightly larger has a well-developed fork to the main horns, while the adults vary very much.

A comparison of this series with a number of skulls from Greenland fails to show any tangible difference either in the characters of the cranium or the antlers. No doubt there are satisfactory differences in the coloration, but lack of skins of the Greenland animal prevents me from making comparisons.

In color the adult skins do not vary to any great extent; No. 299, ♀, March, 1897, is nearly white on the neck and head, the ears and portions of the face and top of head are brownish gray, the middle of the back from shoulders to rump is brownish gray, as well as the legs, sides, under parts, tail and buttocks white, a well-defined dark, narrow lateral band about three inches from the dark dorsal area. Feet white, the brown color running down the middle of each toe to within an inch of the hoof, but much paler than elsewhere on the legs. No. 292, ♀, March 15, 1897, is in much fuller coat, with hair much longer and everywhere lighter, owing to a "frosting" of white hairs. The lateral stripes are not so well defined, and the feet are pure white. The horns of this specimen are in the velvet.

Two of the calves are uniform, dark smoky gray, while the third is varied with white on the rump, face and legs.

Lepus tsohuktschorum (Nordquist.)—Alaskan Polar Hare.

One skeleton of a male obtained April, 1898, on the Ikpikpun river.

“Length, 28.5 ins; hind foot, 7.5; tail, 4.62; ear, 4.25.”
Skull, total length, 112mm; greatest breadth, 57; greatest breadth of nasals, 24.

Ovibos moschatus (Zimm.)—Musk Ox.

One weather-beaten skull picked up on the tundra.

Lemmus trimuoronatus (Rich.)—Alaskan Lemming.

Mr. McIlhenny's magnificent series of 606 skins furnishes abundant material for studying the variations in this species due to age and season.

Two points are at once noticeable upon arranging the specimens according to dates of capture, first, that some young seem to be born every month in the year, and second, that during the four months (August to November) of the expedition's stay at Pt. Barrow only young Lemmings (probably all born that year) were obtained. The latter fact may be merely due to lack of knowledge of the habits of the adults, but owing to the fact that such large numbers of old ones were taken later on, and but few young, it may have something to do with the erratic habits of these curious rodents. The former fact is no doubt accountable for some of the peculiar individual variations in pelage which are seen in the series.

Beginning our study of the series with the first that were obtained, August, 1897, it will be convenient to consider them month by month.

August.—Six specimens, all young, three to five inches long and poorly haired, black and yellow hairs closely mingled over the upper surface with a rufous patch on the rump, blackish under fur everywhere showing through. Below buff with dark under fur very conspicuous.

September.—Fifty-four specimens, twenty-six like the above, twelve younger (three to four inches long), grayer and less rufous, some with only a trace of the latter tint. Sixteen show the transformation from the dull reddish rumped pelage above described,

to a full long-haired pelage of bright yellow buff, brightest on the rump and dusky on the head, below buff with the plumbeous under fur nearly obscured. This I consider to be the regular first winter pelage. Many of this series show the bright yellow-buff hairs about half-grown pushing up through the dull juvenal pelage.

October.—Twenty-two specimens. Three of the earliest (gray) stage, eight of the next (red-rumped), and nine of the winter, though many of the latter are not yet fully molted. Two others are peculiar in being very gray above with no trace of the rufous tint on the rump; they are, however, acquiring the yellow-buff winter pelage. One November specimen is similar and shows distinctly the new buff pelage coming in, though the old pelage is very gray and like that of a very young individual. These specimens were probably born very late in the season, and the juvenal pelage never attained its full development, the molt to the winter dress occurring much earlier in life than in those born in June or July.

November.—One specimen described above.

December.—Three specimens, one like the above and two in full winter pelage, though larger than any so far considered (*i. e.*, 5.80 ins. long).

January.—Eight specimens. Three young like those last described, but farther advanced in the molt, and five in full winter pelage.

February.—Nine specimens. Three in absolutely first pelage, gray, fur much longer and thicker than in summer-born young (length 3.87 ins.). One larger individual molting, and five in winter pelage, duller and more faded than early fall examples.

March.—Twenty-three specimens. Eight small ones in first pelage, similar to summer young, but rather paler and with denser fur. Two molting and thirteen in adult winter pelage (length 5.13–6.83 ins.).

April.—Sixty-eight specimens. Three are well-grown young, with a trace of the rufous rump patch. Sixty-one are in winter pelage or in the spring molt, many of them very ragged with the gray under fur exposed in places. Four have about completed the molt. These have the hair shorter than winter specimens, and are darker colored with the whole rump bright ferruginous.

May.—Two hundred and sixty-four specimens. Twenty are young of various ages, some very small, the oldest showing distinctly the accession of the rufous pelage on the rump, replacing the original gray. Thirteen are in the red-rumped juvenal pelage, and two hundred and thirty-one adults, some still in the ragged winter pelage, some completely molted, and others in transition.

June.—One hundred and forty-eight specimens. Nine young of various ages and one hundred and thirty-nine adults, nearly all in fresh summer pelage.

The four pelages of *L. trimucronatus* that seem to be normal are described in detail below, the colors being compared with Ridgway's *Nomenclature* :

1. The Gray young (No. 168, February 5). Hair brown, slightly tinged with buff in the middle of the back, and with many of the hairs tipped with black. Beneath paler.

Length 97 mm. ; tail 12 ; hind foot 17.

2. The Red-rumped young (No. 46, September 6). Hairs over the anterior part of the back and head raw umber and black finely mingled, some with a golden lustre ; rump and posterior parts dark chestnut, sides pale tawny. Below cinnamon rufous, with the gray under fur conspicuous.

Length 124 mm. ; tail 18 ; hind foot 17.

3. Adult summer (No. 657, May 31). Forward part of body russet and black very finely mingled, shading to very bright chestnut almost hazel on rump, sides tawny ochraceous. Beneath ochraceous buff.

Length 155 mm. ; tail 24 ; hind foot 21.

4. Adult winter (No. 161, January 27). Anterior portions clay color with black hairs finely intermixed, rump and posterior parts, ochraceous, below cream buff.

Length 148 mm. ; tail 23 ; hind foot 22.

Dicrostonyx hudsonius alascensis subsp. nov.—Alaskan Pied Lemming.

The seasonal and individual variations in *Dicrostonyx*, as shown below, is very great, and renders any division into geographical races difficult without extensive series from a number of localities. The material before me, however, indicates that the form inhabiting Alaska and the northwestern part of British America is separable from the *Dicrostonyx* of Labrador, to which the name *hudsonius*

belongs. The type specimen (No. 821, Coll. E. A. McIlhenny, Pt. Barrow, Alaska, ♀, June 8) may be described as follows: Anterior portion of upper surface, rich chestnut, with whitish mottling due to the light bases of the hairs showing through, rump blackish and gray mottled with white, a blackish median dorsal stripe extending to the nose, face gray, ear patches strongly chestnut. Sides and under parts strongly tinted with rusty, with chestnut across the breast between the forelegs; feet white.

D. hudsonius (three specimens in Coll. E. A. and O. Bangs, Hamilton Inlet, Labrador, August 10-19, 1895) differs in its nearly uniform grizzled gray pelage, and almost total absence of chestnut, this color appears only at the base of the fore legs, on the ear patches, and as a slight tint on the sides of the body, but is nowhere as rich as in *alascensis*; the feet are gray or blackish, instead of white, and the under parts are darker. While it is quite probable that the Labrador Lemming is subject to greater variation than shown by the material before me, it also seems evident that it is a much grayer animal at all times than the Alaskan form. The grayest specimen of *alascensis* has more chestnut coloring than any of Mr. Bangs' series or Labrador specimens in the National Museum collection, and the black and gray mottling is much coarser.

There is no tangible difference in the skulls of the two forms. Their measurements follow:

	Length.	Tail.	Hind Foot.
<i>D. hudsonius</i> , No. 4,166 (Bangs), Hamilton Inlet, Labrador, ♂,	150 mm.	8	21
<i>D. h. alascensis</i> , Type, No. 824 (McIlhenny), Pt. Barrow, Alaska, ♂, . .	132		18
<i>D. h. alascensis</i> (largest spec.), No. 496 (McIlhenny), Pt. Barrow, Alaska, . .	165	21	19

A series of forty-eight specimens was obtained, which vary considerably in size, but are all apparently adult.

October and *November* (October 11, November 3, November 13).—These three specimens are decidedly white. The first two show traces of the dark summer pelage everywhere under the long silky winter coat and on the back of the neck, ears and top of the head, the old pelage still remains intact. The last specimen is entirely white, but with a pinkish tinge produced by the partially covered chestnut hairs remaining from the summer coat.

January and February.—Two specimens, both pure white with long silky hair.

March.—Seven specimens. Five pure white and two showing the beginning of the spring molt. The latter are white, with a general pinkish tinge produced by the dark hairs of the new summer coat; two have dusky lines between the shoulders, and one has well-defined pinkish bands from the eyes to the rump where they join and continue as one band to the tail, there are also rusty spots at the base of the fore legs.

April.—Ten specimens. Four are pure white, and one white with a dusky area on the head and across the occiput, ending in a longitudinal stripe on the forepart of the back. These dark marks are apparently not produced by the ingrowing summer hair. The other five are beginning the molt though the prevailing color is still white.

May.—Sixteen specimens. One pure white (May 26), one with several round spots of chestnut on the back of the neck, but otherwise white, evidently injured late in winter or early in spring, the new hair coming in dark. Two others have the centre of the back more or less dark, with a well-defined median dark stripe. Ten others are white beneath and on the sides, gray on the head, rump and middle of back, rest of upper surface rusty, inclining to chestnut, with a dark median stripe. These average 132 mm. in length, and are dull in appearance compared with June specimens, probably due to scattered short white hairs in the pelage.

Two large ones, average length 160 mm., are much more chestnut than the above series, one is in complete summer pelage, the other is white below with the whole posterior part of the body veiled with the long white winter hairs.

June.—Ten specimens all in summer pelage, though varying much individually. All are rusty beneath with the gray under fur conspicuous. Above the normal pelage appears to be mottled chestnut and white on the anterior half of the body, the white being confined to the basal part of the hair and more conspicuous in some than in others, posterior half iron gray or black, with more or less white bases to the hairs, face gray, nose black, feet and tail white. On some specimens there is a median black stripe. The most extreme specimen has a complete median stripe from nose to tail, and the whole back mottled with black and gray,

giving it a grizzled appearance, while the hairs over the shoulders and on the ears are chestnut, and a few on the forepart of the back are chestnut tipped. In size this June series averages 137 mm., the extremes being 165 and 112. The heavy claws on the fore feet are well developed on all of the series, except three of the June specimens.

ON THE RELATIONSHIP OF NORTH AMERICAN LEMMINGS.

The number of species of American Lemmings of the genera *Lemmus* and *Dicrostonyx* and their proper nomenclature has long been an unsettled question.

In the present connection it occurred to me that an opportunity was offered to throw some light on the subject, and through the kindness of the authorities of the U. S. National Museum, the American Museum of Natural History and of Mr. Outram Bangs, I now have before me a series of 129 specimens in addition to the magnificent series of 654 skins secured by Mr. McIlhenny.

Owing to the great variation in these animals due to age and season the series is still insufficient to satisfactorily settle all the points at issue, though much is made clear.

The American specimens of *Lemmus* have been variously referred by writers to *L. lemmus*, *L. obensis* and *L. helvolus*.

The first two are respectively European and Siberian animals, and, as can be seen at a glance, are wholly different from any American Lemmings as well as from each other.

Leaving these out of the discussion, we have to consider the names proposed for the American animals. There are, I believe, only four:

Arvicola trimucronata Rich.

Parry's Second Voyage, App. (1825), p. 309.

Type locality, Point Lake, lat. 65° N.

Arvicola helvolus Rich.

Fauna Boreali-Americana (1829), p. 128.

Type locality, Alpine Swamps in lat. 56°. Evidently near the headwaters of Peace river.

Myodes nigripes True.

Proc. U. S. Nat. Mus., vol. xvii, No. 799, April 26, 1894.

Type locality, St. George's Island, Alaska.

Myodes albigularis Wagner,

Schreber's Säugeth. Suppl. (1843), vol. 3, p. 602.

Several specimens in the U. S. Nat. Mus. from the Arctic coast are practically topotypes of *L. trimucronatus*, the type locality of which is Point Lake.

These are identical with Pt. Barrow specimens of similar age, and Richardson's description, which is of an adult female animal, can be well matched by specimens in the McIlhenny series.

This being the oldest of the three names proposed, no difficulty presents itself in applying it to the *Lemmus* of the Arctic coast.

We have now to consider the status of the two other described forms. Richardson's description of *L. helvolus* is not sufficiently detailed to judge of its relationship with the more northern form. I have before me, however, a specimen from the collection of the Amer. Mus. of Nat. Hist., obtained by A. J. Stone in the Cassiar Mts., directly west of the region where Drummond collected the type of *L. helvolus*. This specimen is, unfortunately, not fully adult, and it is difficult to decide as to its relationship with the Arctic form. I find no apparent cranial differences between it and specimens of the same size from Alaska, while in color it is rather yellower than any of the Arctic series. Without more material it is impossible to say whether the two are identical or not, though it seems quite likely that the southern form will prove subspecifically different in which case it will stand as *Lemmus trimucronatus helvolus* Rich.

Lemmus nigripes True, is an island form restricted to St. George's Island. Though generally regarded as quite distinct, the large Pt. Barrow series before me contains specimens that come very close to the island form. The latter are, however, darker and have blacker feet than specimens of the same size from the mainland, and are apparently distinct, though very closely related. I have seen no specimens of *L. nigripes* which approach in size or color the old adults of *L. trimucronatus*. The great variation in *L. trimucronatus*, which presumably exists also in the other forms just mentioned, has been already described at length; and it is now quite evident that several specimens in the National Museum collection which, from their difference in size and coloration, appeared to represent distinct⁴ species, are really identical. *L. albigularis*

⁴ Cf. True, *Report of Fur Seal Investigations, 1896-7*, Part iii, p. 347.

Wagn., is apparently a synonym of *L. trimucronatus*, but if the Sitkan animal proves separable this name is available.

The species of *Lemmus* before me in adult pelage may be distinguished as follows:

Anterior part of back as well as whole front of head jet black;
rest of upper surface, including area just above ears, tawny
ochraceous. *L. lemmus*.

Head gray, body tawny ochraceous to chestnut, with a longitudinal black stripe from nose to shoulders, beneath yellowish white.

L. obensis.

Upper surface russet passing to chestnut on rump, no median stripe,
below ochraceous buff. Feet gray or white. *L. trimucronatus*.

Similar to the last but much duller and browner, with the feet black.

L. nigripes.

Our American *Dicrostonyx* has generally been referred to the European *D. torquatus* Pallas, but while certainly quite closely related to this form, I regard it as probably distinct. Unfortunately, no skins of the Old World animal are available for comparison, and I have only been able to examine one skull from Petschara, Russia, kindly loaned by Mr. Gerrit S. Miller, Jr., from which no very satisfactory deductions can be made.

For the American animal only one name has been proposed: *hudsonius* of Pallas, while Richardson proposed *groenlandicus* for the *Dicrostonyx* of Greenland.

I am inclined to think that the characters upon which this last form was based are due to age and season, but it is quite likely that the animal may prove distinct, in which case Richardson's name will be available. The Greenland material that I have is all alcoholic, and the specimens do not seem fully adult, so that no satisfactory comparison is possible except as to cranial characters, and here I find no apparent difference.

The three specimens of *Dicrostonyx* kindly loaned by Mr. Bangs are from Labrador and consequently topotypes of *D. hudsonius*. They, as well as other Labrador specimens before me, are uniformly grayer and more finely mottled than Alaskan examples, as already explained, and in consequence I have proposed to separate the western form as *D. h. alascensis*.

Spermophilus empetra (Pall.)—Parry's Spermophile.

Forty-four skins of this animal were obtained. Four June specimens are pale and somewhat ragged, with the thick woolly under fur rather conspicuous, while two others taken late in the same month are darker, brighter and distinctly rusty beneath. These latter are evidently in the fresh summer pelage. Four July specimens are similar while two young individuals are very gray, with the back obscurely mottled, but without distinct white spots. The pelage is very thin.

The August series includes eight normal adults, three young and one large adult, which is remarkably gray below and dusky above, with scarcely any trace of rusty tints. A similar specimen was obtained in September, but the rest of the autumn series of eighteen specimens are normal (September to November 12). One albino obtained in November, 1895, by Charles Brower, is in the collection.

Sorex personatus streatori Merriam—Streator's Shrew.

Three specimens which measure as follows:

		Length.	Tail.	Hind Foot.
71.	♀, September 16, 1897, . . .	86 mm.	34	10
72.	♀, September 17, 1897, . . .	91	35	10
159.	♂, October, 1897,	88	34	11

Odobænus obesus (Illig.)—Pacific Walrus.

Two skeletons and one skull.

Callotaria ursina (Linn.)—Fur Seal.

One female, obtained at Pt. Barrow, August 17, 1897, measuring 48 ins. in length.

Erignathus barbatus (Fabr.)—Bearded Seal.

One male specimen prepared as a skeleton was secured September 7, 1897. It measured "88 ins. in length, hind foot 20.5 ins., greatest girth 60 ins." (McIlhenny).

Phoca largha Pallas—Pallas' Seal.

Four skulls and two skeletons of this seal were secured. The cranial and dental peculiarities already pointed out by Dr. Merriam hold good throughout the series, and the species is certainly distinct from *P. vitulina*, which it represents on the Pacific coast of the continent.

Mr. McIlhenny's measurements of the length of his specimens

are as follows: No. 22, 59 ins.; No. 30, 48 ins.; No. 31, 69 ins.; No. 32, 61 ins.; No. 33, 56 ins.; No. 54, 59 ins.

***Phoca foetida* Fabr.—Ringed Seal.**

Twenty-eight skulls and five skeletons of the Ringed Seal are in the collection, together with several skins. A comparison of the skulls with a series from the coast of Greenland fails to show any tangible differences.

***Thalarctos maritimus* (Phipps)—Polar Bear.**

One skeleton and five skulls.

***Putorius arcticus* Merriam—Tundra Weasel.**

Four skins of this species were obtained:

	Length.	Tail.	Hind Foot.
115. ♂, October 9, 1897, . . .	378 mm.	147	46
150. ♂, December 28, 1897, . . .	406	127	44
173. ♂, February 11, 1898, . . .	399	127	46
719. ♂, June 7, 1898, . . .	323	—	47

The first three are white, the last one brown, with the belly pale yellow slightly tinged ochraceous, (a mingling of the primrose and Naples yellow of Ridgway's *Nomenclature of Colors*).

The deep black tip to the tail measures 67.2 mm.

The skull of No. 115 measures as follows: Basilar length 44; mastoid breadth 22.2; breadth of postorbital processes 15; orbital breadth before postorb. proc. 11.8; orbital breadth behind do. 11; last molar to foramen magnum 29; palate 18.

***Putorius rixosus eskimo* subsp. nov.**

Five specimens of this interesting little animal were secured and an additional skull showing the milk dentition. The measurements are as follows:

	Length.	Tail.	Hind Foot.
827. ♂, June 21, 1898, . . .	204 mm.	28	20
828. ♂, June 25, 1898, . . .	230	31	22
826. ♀, June 17, 1898, . . .	180	24	16
829. ♀, June 14, 1898, . . .	178	22	19
848. ♀, July 25, 1898, . . .	184	25	23

When Mr. Outram Bangs and Dr. Merriam prepared their excellent monographs of American Weasels, there was no good series of Least Weasels from the far North, and it is therefore not

surprising that the present form was not recognized. On first examination I took it to be *P. rixosus*, but a comparison with the type which was kindly loaned by Mr. Bangs showed at once that it belonged to a well-marked race, though evidently allied to that form. Mr. Bangs has since compared some of the above specimens with other examples of *P. rixosus* in his collection, and confirmed my views. He further states that it needs no comparison with *P. nivalis* of northern Europe, though lack of specimens leaves us uncertain as to what its relation to the Least Weasel of Siberia may be. As no form has yet been described from the latter country, however, no complication in nomenclature will result.

The type specimen of *P. rixosus eskimo*, No. 848, Coll. E. A. McIlhenny, ♀, July 25, 1898, Pt. Barrow, Alaska, is brown, with a tinge of reddish, being intermediate between Prout's brown and walnut brown of Ridgway's *Nomenclature of Colors*. It is much duller than *P. rixosus*, which is "burnt umber to Vandyke brown." The other specimens are still duller than the type, the extreme specimen, No. 826, being almost drab.⁵ These are perhaps younger individuals. *P. rixosus eskimo* has a shorter tail than true *P. rixosus*, and rather larger feet.

The skull has the same strong sagittal ridge as *P. rixosus*, but is in every way larger. The measurements in mm. are appended:

	Basilar Length.	Mastoid Breadth.	Breadth of Postorbit. Processes.	Orbital Breadth before Postorbit. Processes.	Orbital Breadth behind Postorbit. Processes.	Last Molar to Foramen Magnum.	Palatal Length.
<i>P. rixosus</i> (type), ♀, No. 642, Bangs.....	26.5	13.4	7.5	5.5	....	....	11.
<i>P. rixosus eskimo</i> (type), ♀, No. 848.....	29.	15.4	9.3	8.	8.2	20	12.1
<i>P. rixosus eskimo</i> , ♂, No. 828.....	35.	17.	11.	9.	9.5	24	14.4

A specimen of this race in pure white winter pelage is in the collection of the Academy of Natural Sciences of Philadelphia, obtained at Bethel, Alaska, by J. H. Romig.

⁵ Cf. Ridgway's *Nomenclature*.

Canis occidentalis Rich.—Timber Wolf.

One skeleton (female) and one skull (male) were obtained, the latter from some distance inland. The female measured as follows: No. 220. ♀, March, 1898. Length 1,550 mm.; tail 430; hind foot 298; ear 126; girth 852; height 765.

While I am not at all prepared to consider the relationships of the large Wolves of North America, I append a table of measurements of skulls in the collection of the Academy of Natural Sciences, Philadelphia, and of the two Alaskan specimens above mentioned:

	Basilar Length.	Zygomatic Breadth.	Mastoid Breadth.	Across Postorbit. Processes.	Breadth before Postorbit. Processes.	Breadth behind Postorbit. Processes.	Last Molar to Foramen Magnum.	Palate.
2,260 (A.N.S.), Missouri	200	134	62	61	45	39	91	109
2,262 (A.N.S.), Pennsylvania	205	130	64	53	42	37	95	118
2,261 (A.N.S.), Pennsylvania	208	122	64	57	44	42	93	117
2,256 (A.N.S.), Germany	212	128	67	57	44	43	96	115
2,253 (A.N.S.), Sweden	212	126	68	55	41	41	95	113
2,254 (A.N.S.), Sweden	220	142	66	..	..	43	109	116
2,266 (A.N.S.), <i>L. g i g a s</i> Towns., Columbia River	236	151	72	78	54	49	108	130
220 (McI.), Point Barrow . . .	222	144	65	65 (?)	49	38	106	125
297 (McI.), Point Barrow . . .	224	138	63	65	50	41	103	...

Vulpes lagopus Linn.—Arctic Fox.

Seventeen specimens were obtained, six skins, four with skulls; two skeletons and nine separate skulls.

Five adult specimens measured as follows in mm.:

	Length.	Tail.	Hind Foot.
142. ♀, November 1, 1897,	993	408	126
143. ♂, November 1, 1897,	948	368	138
153. ♂, December, 1897,	1020	408	152
830. ♂, June 27, 1898,	926	356	175
831. ♀, June 27, 1898,	864	330	175

A pup, No. 832, ♂, June 21, 1898, measures about 300 mm. in length. It is of a general plumbeous color, lighter beneath with a dark dorsal area spreading out on the flanks. The face and feet have a number of scattered white hairs. The two summer adults are in very ragged pelage, the female is almost entirely covered with a thick, somewhat matted fur like coat, and here and there all over the body are scattered long white hairs left from the winter coat. The full summer hair seems to be only just appearing. The male specimen is more advanced and the dark hairs of the summer pelage are conspicuous. The general color of both specimens is the same, though the tints of the male are brighter.

The whole head above and below and a broad dorsal band are dull brown (between the seal and clove brown of Ridgway), this color also spreads over the flanks and shoulders, and down the outside of the legs to their extremities as well as on the upper surface of the tail. The sides, belly and inside of the legs are dull, buffy white, passing to vinaceous on the breast and along the edge of the dorsal band. The tips of the ears are white and a number of white hairs are scattered over the face. The brown hairs which are appearing in the wooly pelage of the back are tipped and ringed with buff.

The winter specimens are in pure white, very long pelage; at the end of the tail the gray under fur is visible, but elsewhere it can only be seen by separating the white hairs to their very bases.

Compared with a series of Arctic foxes from Greenland, the skulls collected by Mr. McIlhenny show conclusively that they belong to a different geographic race. They are larger and heavier than the Greenland specimens, and the audital bullæ are more divergent posteriorly.

Messrs. Hamilton and Bonhote have recently (*Ann. Mag. Nat. Hist.*, April, 1898, p. 287) separated the Arctic Fox of Spitzbergen from that of the European continent as *V. l. spitzbergenensis*, and associate with it the Greenland form. From lack of material they were unable to decide upon the relationship of the American continental animal, though they suggested that it would prove identical with that of Europe.

Being without Old World material for comparison, I am equally unable to settle the point, but from size alone I should endorse their views.

The statement that both forms occur in Greenland seems very unlikely, and I should rather suggest that the large "Davis Strait" examples came from the western side of the strait. The measurements of the Alaskan skulls and a series of Greenland specimens in the Academy's collection give the following averages:

	Basilar Length.	Zygomatic Breadth.	Mastoid Breadth.	Across Postorbit. Processes.	Orbital Width before Postorbit. Processes.	Orbital Width behind Postorbit. Processes.	Last Molar to Foramen Magnum.	Palate.
Greenland, males.....mm.	115	67	46	32	27	23	53	60
Alaskan, males..... "	121	72	47	36	29	25	54	63
Greenland, females..... "	100	60	43	28	24	22	46	52
Alaskan, females..... "	115	70	45	33	28	23	52	61

Lynx canadensis mollipilosus subsp. nov.—Arctic Lynx.

A single male Lynx was obtained at Wainwright Inlet, Pt. Barrow, November, 1897, which seems to be subspecifically different from the true *Lynx canadensis*, and may be described as follows:

Type No. 141. Coll. E. A. McIlhenny. Browner and less gray than true *Lynx canadensis*, with a very dense, soft, woolly pelage. Skull decidedly narrower, higher and more arched than *L. canadensis*, and much more constricted across the frontals and between the orbits, the postorbital processes are conspicuously more slender.

Measurements.—Total length 1,040 mm.; tail vertebra 130; hind foot 260 (approx.).

The skull measurements compared with those of true *L. canadensis* and an intermediate specimen from British Columbia in the collection of Mr. Outram Bangs are given in the following table:

	Basilar Length.	Occipito-nasal Length.	Zygomatic Breadth.	Mastoid Breadth.	Across Postorbit. Processes.	Orbital Breadth before Postorbit. Processes.	Orbital Breadth behind Postorbit. Processes.	Last Molar to Foramen Magnum.	Length of Palate.	Length of Mandible.
<i>L. can. mollipilosus</i> , No. 141 (McI.) Alaska, mm.	113.5	124.	.....	56.2	.....	28.	38.	70.	49.2	90.5
<i>L. can. mollipilosus</i> (intermediate), No. 9,059 (Bangs), Brit. Columbia	107.6	121.4	90.2	53.6	54.8	28.	38.4	67.6	47.2	86.2
<i>L. canadensis</i> , No. 7,259 (Bangs), Maine.....	105.6	118.8	93.	55.4	60.4	30.8	38.2	68.	48. ²	85.4

This is evidently a northwestern form of *L. canadensis*, and extends southward to British Columbia, as the specimen above referred to from Sumas, B. C., is much more nearly allied to it than to true *L. canadensis*. Alberta specimens in Mr. Bangs' collection, on the other hand, are nearer to *L. canadensis*, though showing a slight tendency toward *L. mollipilosus*. I am particularly indebted to Mr. Outram Bangs for his courtesy in examining and comparing the Alaskan specimen, and in placing in my hands a description and measurements of his British Columbia specimen, as well as in loaning his fine series of *Lynx* skulls.